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BIOLOGICAL BULLETIN

THE MARINE BIOLOGICAL LABORATORY

EIGHTEENTH REPORT; FOR THE YEAR 1915

TWENTY-EIGHTH YEAR.

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I. TRUSTEES

EX OFFICIO

FRANK R. LILLIE, *Director*, The University of Chicago.

GILMAN A. DREW, *Assistant Director and Vice-President*, Marine
Biological Laboratory.

D. BLAKELY HOAR, *Treasurer*, 161 Devonshire Street, Boston, Mass.

GARY N. CALKINS, *Clerk of the Corporation*, Columbia University.

TO SERVE UNTIL 1918

CORNELIA M. CLAPP..... Mount Holyoke College.

E. G. CONKLIN..... Princeton University.

ROSS G. HARRISON..... Yale University.

CAMILLUS G. KIDDER..... 27 William Street, New York City.

M. M. METCALF Oberlin, Ohio.
 WILLIAM PATTEN Dartmouth College.
 JACOB REIGHARD University of Michigan.
 W. B. SCOTT Princeton University.

TO SERVE UNTIL 1917

S. F. CLARKE Williams College.
 CHARLES A. COOLIDGE Ames Building, Boston, Mass.
 C. R. CRANE Woods Hole, Mass., *President of the Board*.
 ALFRED G. MAYER Carnegie Institution.
 C. E. MCCLUNG University of Pennsylvania.
 T. H. MORGAN Columbia University.
 ERWIN F. SMITH United States Department of Agriculture.
 E. B. WILSON Columbia University.

TO SERVE UNTIL 1916

H. H. DONALDSON Wistar Institute of Anatomy and Biology.
 M. J. GREENMAN Wistar Institute of Anatomy and Biology.
 C. W. HARGITT Syracuse University.
 H. S. JENNINGS Johns Hopkins University.
 GEORGE LEFEVRE University of Missouri, *Secretary of the Board*.
 A. P. MATHEWS The University of Chicago.
 G. H. PARKER Harvard University.
 HENRY B. WARD University of Illinois.

TO SERVE UNTIL 1915

H. C. BUMPUS Tufts College.
 R. A. HARPER Columbia University.
 W. A. LOCY Northwestern University.
 JACQUES LOEB The Rockefeller Institute for Medical Research.
 F. P. MALL Johns Hopkins University.
 GEORGE T. MOORE Missouri Botanical Garden, St. Louis.
 L. L. NUNN Telluride, Colo.
 JOHN C. PHILLIPS 299 Berkeley Street, Boston, Mass.

II. ACT OF INCORPORATION

No. 3170.

COMMONWEALTH OF MASSACHUSETTS

Be It Known, That whereas Alpheus Hyatt, William Sanford Stevens, William T. Sedgwick, Edward G. Gardiner, Susan Minns,

Charles Sedgwick Minot, Samuel Wells, William G. Farlow, Anna D. Phillips and B. H. Van Vleck have associated themselves with the intention of forming a Corporation under the name of the Marine Biological Laboratory, for the purpose of establishing and maintaining a laboratory or station for scientific study and investigation, and a school for instruction in biology and natural history, and have complied with the provisions of the statutes of this Commonwealth in such case made and provided, as appears from the certificate of the President, Treasurer, and Trustees of said Corporation, duly approved by the Commissioner of Corporations, and recorded in this office;

Now, therefore, I, HENRY B. PIERCE, Secretary of the Commonwealth of Massachusetts, *do hereby certify* that said A. Hyatt, W. S. Stevens, W. T. Sedgwick, E. G. Gardiner, S. Minns, C. S. Minot, S. Wells, W. G. Farlow, A. D. Phillips, and B. H. Van Vleck, their associates and successors, are legally organized and established as, and are hereby made, an existing Corporation, under the name of the MARINE BIOLOGICAL LABORATORY, with the powers, rights, and privileges, and subject to the limitations, duties, and restrictions, which by law appertain thereto.

Witness my official signature hereunto subscribed, and the seal of the Commonwealth of Massachusetts hereunto affixed, this twentieth day of March, in the year of our LORD ONE THOUSAND, EIGHT HUNDRED and EIGHTY-EIGHT.

HENRY B. PIERCE,

Secretary of the Commonwealth.

[SEAL.]

III. BY-LAWS OF THE CORPORATION OF THE MARINE BIOLOGICAL LABORATORY

I. The annual meeting of the members shall be held on the second Tuesday in August, at the Laboratory, in Woods Hole, Mass., at 12 o'clock noon, in each year, and at such meeting the members shall choose by ballot a Treasurer and a Clerk, who shall be, *ex officio*, members of the Board of Trustees, and Trustees as hereinafter provided. At the annual meeting to be held in 1897, not more than twenty-four Trustees shall be chosen, who shall be divided into four classes, to serve one, two, three, and four years, respectively, and thereafter not more than eight Trustees shall be chosen annually for the term of four years. These officers shall hold their respective offices until others are chosen and qualified in their stead. The Director and Assistant Director, who shall be chosen by the Trustees, shall also be Trustees, *ex officio*.

II. Special meetings of the members may be called by the Trustees, to be held in Boston or in Woods Hole at such time and place as may be designated.

III. The Clerk shall give notice of meetings of the members by publication in some daily newspaper published in Boston at least fifteen days before such meeting, and in case of a special meeting the notice shall state the purpose for which it is called.

IV. Twenty-five members shall constitute a quorum at any meeting.

V. The Trustees shall have the control and management of the affairs of the Corporation; they shall present a report of its condition at every annual meeting; they shall elect one of their number President and may choose such other officers and agents as they may think best; they may fix the compensation and define the duties of all the officers and agents; and may remove them, or any of them, except those chosen by the members, at any time; they may fill vacancies occurring in any manner in their own number or in any of the offices. They shall from time to time elect members to the Corporation upon such terms and conditions as they may think best.

VI. Meetings of the Trustees shall be called by the President, or by any two Trustees, and the Secretary shall give notice thereof by written or printed notice sent to each Trustee by mail, postpaid. Seven Trustees shall constitute a quorum for the transaction of business. The Board of Trustees shall have power to choose an Executive Committee from their own number, and to delegate to such Committee such of their own powers as they may deem expedient.

VII. The President shall annually appoint two Trustees, who shall constitute a committee on finance, to examine from time to time the books and accounts of the Treasurer, and to audit his accounts at the close of the year. No investments of the funds of the Corporation shall be made by the Treasurer except approved by the finance committee in writing.

VIII. The consent of every Trustee shall be necessary to dissolution of the Marine Biological Laboratory. In case of dissolution, the property shall be given to the Boston Society of Natural History, or some similar public institution, on such terms as may then be agreed upon.

IX. These By-Laws may be altered at any meeting of the Trustees, provided that the notice of such meeting shall state that an alteration of the By-Laws will be acted upon.

X. Any member in good standing may vote at any meeting, either in person or by proxy duly executed.

IV. TREASURER'S REPORT

Inasmuch as the records of the Laboratory have been reorganized on an income and expense basis, taking into account the bills receivable and payable, as well as the cash receipts and disbursements, the treasurer makes a departure from the form of report previously employed in order to be in accord with the new methods.

The cash statement of operations is, therefore, now presented in consolidated form and the income and expense schedule follows accompanied by a balance-sheet, showing the condition of the Laboratory on December 31, 1915, as far as the figures are available. Figures for the plant and inventory valuations are in process of compilation.

CONSOLIDATED CASH STATEMENT OF RECEIPTS AND DISBURSEMENTS FOR THE YEAR ENDED DECEMBER 31, 1915

OPERATING ACCOUNTS

Cash on hand January 1, 1915.....	\$1,686.68
Receipts from departments.....	\$46,676.99
Receipts from donations.....	35,500.00
Receipts from work done for others.....	1,402.16
Receipts from loans repaid.....	125.00
Total receipts for year.....	<u>\$83,704.15</u>
Payments for departmental expenses.....	\$61,856.38
Payments for improvements... ..	16,863.51
Payments for work done for others.....	1,537.05
Payments for new town landing	761.50
Payments for Loan.....	25.00
Total payments.....	<u>81,043.44</u>
Excess of receipts for year.....	2,660.71
	<u>\$4,347.39</u>
Less Oklahoma warrant included in cash receipts but not yet paid.....	135.23
Cash balance December 31, 1915.....	<u><u>\$4,212.16</u></u>

CASH RECEIPTS AND PAYMENTS ON ACCOUNT OF INVESTMENTS
FOR THE YEAR ENDED DECEMBER 31, 1915

RESERVE FUND

Cash on hand January 1, 1915..... \$210.30

Receipts:

Interest —\$3,000 American Telephone & Telegraph Company, 4 per cent bonds.....	60.00	
¾ of \$500 Western Telephone & Telegraph Company 5's...	18.74	
Dividend—6 shares American Smelting & Refining Company, preferred	42.00	
8 shares General Electric Company.....	64.00	
14 shares United Shoe Machinery Corporation, preferred..	21.00	
2 shares Massachusetts Gas, preferred.....	8.00	
Interest on bank deposit.....	1.04	
	<u>\$425.08</u>	

Payments:

Purchase of 2 shares Massachusetts Gas Companies, preferred.....	180.25	\$244.83
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LUCRETIA CROCKER FUND

Cash on hand January 1, 1915..... \$ 99.04

Receipts:

Interest —1/5 of \$1,000 American Telephone & Telegraph Company 4 per cent. bond.....	8.00	
Dividend—18 shares Vermont & Massachusetts Railroad Company.	108.00	
1 share West End Street Railway Company.....	3.50	
1 share American Telephone & Telegraph Company.....	8.00	
2½ shares General Electric Company.....	20.00	
	<u>\$246.54</u>	

Payments:

2 Scholarships.....	<u>100.00</u>	146.54
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LIBRARY FUND

Cash on hand January 1, 1915..... \$174.16

Receipts:

Interest —4/5 of \$1,000 American Telephone & Telegraph Company 4's.....	32.00
1/4 of \$500 Western Telephone & Telegraph Company, 5's..	6.26
Dividends—3 shares American Telephone & Telegraph Company.....	24.00
1 share American Smelting & Refining Company, preferred	7.00
2 1/2 shares General Electric Company.....	20.00
5 shares United Shoe Machinery Company, preferred....	7.51
2 shares Massachusetts Gas Companies, preferred.....	8.00
	<u>\$278.93</u>

Payments:

Purchase 2 shares Massachusetts Gas Companies, preferred.....	<u>181.26</u>	<u>97.67</u>
Cash on hand December 31, 1915.....		<u>\$489.04</u>

INCOME AND EXPENSE FOR YEAR ENDED DECEMBER 31, 1915

	<i>Expense</i>	<i>Income</i>
Administration expense.....	\$ 6,805.36	
BIOLOGICAL BULLETIN.....	2,594.69	\$ 1,523.36
Boat department expense.....	6,629.63	
Carpenter department expense.....	983.09	
Chemical department expense.....	1,430.82	
Dormitories.....	1,489.49	1,691.04
Fish trap.....	1,159.21	667.21
Instruction.....	3,435.98	5,150.00
Philosophical lectures.....	100.00	
Library department expense.....	2,628.64	
Mess.....	15,753.01	16,165.48
Membership dues.....		1,000.00

Maintenance, buildings and grounds. . . .	5,220.23	
New laboratory expense.	1,927.76	
Pumping station expense.	464.70	
Research income.		3,175.00
Sundry expense and income.	2,165.48	3,255.25
Supply department.	12,822.40	19,150.77
Interest on notes payable.	150.00	
Total expense.	\$65,760.49	
Total income.	51,778.11	\$51,778.11
Excess of expense.	\$13,982.38	
Contribution by Mr. C. R. Crane.	20,000.00	
Excess carried to balancing account.	\$ 6,017.62	

BALANCE-SHEET, DECEMBER 31, 1915

<i>Assets</i>		<i>Liabilities and Capital</i>	
Cash, bank.	\$ 4,212.16	Accounts payable. \$	1,394.02
Petty cash.	200.00	Note payable. . . .	3,000.00
Accounts receivable	7,642.37	Trust funds.	8,222.55
Investments.	10,733.51	Balancing account	33,997.98
Investment cash. . .	489.04		
Inventories.			
Plant account.			
Improvements, 1915	23,337.47		
	<u>\$46,614.55</u>		<u>\$46,614.55</u>

D. BLAKELY HOAR, ESQ., Treasurer,
Marine Biological Laboratory
Woods Hole, Mass.

161 Devonshire Street, Boston.

Dear Sir: We have audited the accounts of the Marine Biological Laboratory as kept at Woods Hole and of the trust funds and accounts as kept at your office, 161 Devonshire Street, for the year ended December 31, 1915.

We have checked the report of the Treasurer submitted above and find it correct and in accord with the books. The extent of the audit together with the supporting schedule is set forth in a detailed report under date of February 1, 1916.

Very respectfully,

HARVEY S. CHASE & Co.,
Certified Public Accountants

V. LIBRARIAN'S REPORT

AUGUST, 1915

Since the last annual report the reorganization of the library has been carried on by Miss Scott, who has brought each department up to a state of system and efficiency.

We can now make a more definite statement of the contents of the library, including a number of accessions not previously listed: Total number of accessions 10,046. Old and new accessions recorded since last report 6,746. Of these there have been added since 1914:

934 volumes loaned by the American Museum of Natural History,
 466 volumes given by the Wisconsin Academy of Sciences,
 200 " given by Mr. Crane,
 720 " bound during year.

These volumes may be conveniently divided as follows:

Journals, for which most of our appropriation is expended and which form the bulk of the library, in bound sets.....	95
Serials and publications of academies, museums, laboratories, and societies (many of these are from exchanges which are steadily increasing).....	188
Books:	
Zoology.....	321
Botany.....	134
Physiology.....	100
Hygiene and medicine.....	74
Chemistry.....	18
Evolution.....	82
Psychology.....	36
Philosophy.....	104
Miscellaneous.....	198
Total.....	1,067

We can buy very few books and are dependent upon gifts from authors and publishers, who recognize that this is a particularly useful place to have their works examined.

The separates number 4,000. Our reprint collection might easily be notably increased through the aid of authors and friends. Such duplicates are in great demand.

The following advances have been made. First, and very important, is the considerable number of missing parts which

have been secured by Miss Scott's enterprise toward completing back volumes of sets.

These have been completed: *Nature*, *Wilson Bulletin*, *University of California Publications in Zoölogy*, *Colorado University Studies*, *Bergens Museum Publications*.

These have been added to but are still incomplete:

Annales d. Sciences Naturelles—Zoölogy,
Bulletin Museum of Comparative Zoölogy, Harvard,
Proceedings Boston Society of Natural History,
Proceedings American Philosophical Society,
American Naturalist,
American Journal of Science and Arts,
Journal Medical Research,
Field Columbian Museum Publications,
Bureau of Fisheries, Bulletin and Report,
Contributions U. S. National Herbarium,
Proceedings American Association for the Advancement of Science,
Proceedings Iowa Academy of Sciences,
Proceedings Indiana Academy of Sciences.

The following new sets have been added to the library:

Transactions American Microscopical Society,
Transactions Wisconsin Academy of Sciences,
Bulletin Torrey Botanical Club,
American Journal of Botany,
Proceedings Academy of Natural Sciences, Philadelphia,
Journal of Parasitology,
Illinois Biological Monographs,
Unpopular Review,
Annals Missouri Botanical Garden,
Indiana University Studies,
U. S. Bureau of Education, Report and Bulletin,
U. S. War Department, Bulletin,
Maine Agricultural Experiment Station, Report and Bulletin,
Museum of Brooklyn Institute of Arts and Sciences, Science Bulletin.

Seventy-six volumes of Hoppe-Seyler's *Zeitschrift für Physiologische Chemie* were purchased from Miss Koch for \$200, and

the remainder of the set, which is now in the 94th volume, has been secured.

Exchanges now number 29; six have been arranged this year: *Indian Museum*; *American Journal of Botany*; *New York Academy of Sciences*; *Academy of Natural Sciences, Philadelphia*; *Biologische Untersuchungen, Stockholm*; and *Zoologiska Bidrag, Upsala*. New subscriptions have been placed for the *Popular Science Monthly* and the *English Journal of Physiology*.

Here we must report a partial disposition of the Journal Fund which was begun in 1912. Since then, a number have subscribed to this fund which is to enable us to secure new files of journals. Drs. Mayer, Knowler, Meigs, Rice and Just have subscribed from \$5 to \$10 a year for a period of five years. This has already furnished \$55 and will still accumulate from new gifts.

In addition, last year Mr. Tashiro and a number of other investigators, interested in securing the *English Journal of Physiology*, subscribed amounts from 50 cents to \$1 each, thus securing \$7.50. This sum has now been increased to \$12. For this, we must thank Drs. Tashiro, Heilbrunn, Gould, Wherry, Packard, Sturtevant, Bridges, Harvey, Metz, and Morgan, and Misses Hoge, Medes, Browne, and Dunn. Such coöperation is most encouraging. It makes possible a purchase long needed. We have subscribed to the *Journal* with this gift and have used the amount already accumulated for the Journal Fund to purchase a number of back volumes, hoping gradually complete to the set.

Further growth in this spirit of coöperation in building up the library is shown in the list of important gifts.

Various publishers have given a total of 16 books this year. Miss Fay has given several quite valuable books on mushrooms. Mr. Crane gave us two hundred volumes from his personal library, as well as two very interesting Russian curios. Dr. George T. Moore gave duplicates from his library, 28 bound volumes and 21 separates. Dr. Philipp Fischelis donated 53 valuable papers by Kowalewsky and other Russian authors. Dr. Conklin has given his book on "Heredity and Environment," Dr. Parker, his book on "Biology and Social Problems," and Dr. Abbott has ordered a copy of his book on "General Biology" sent to us. Dr. Calkins also presented his textbook on "Biology."

The Wistar Institute gave a set of the "Biological Lectures," Mrs. Gardiner donating Volume I. to complete our set. Dr. Ward gave a subscription to the *Journal of Parasitology*, and Dr. Bumpus to the current volume of the *American Naturalist* and the *Unpopular Review*. Dr. Gustav Retzius has promised to send a complete set of his works as soon as transportation is safer. Three hundred and twelve reprints have been presented to the library this year by various authors.

Through the coöperation of Dr. George Wagner, a large number of duplicates from the library of the Wisconsin Academy of Sciences are being transferred to this library; 466 volumes have been received and the number will probably reach 1,000.

The Prince of Monaco has sent us about 75 photographs of the buildings and equipment of the Institut Oceanographique, together with pamphlets telling about the foundation and progress of the institute. A number of other stations have sent various literature and photographs, and it is hoped to secure material of this kind from all biological stations in the world.

We wish to acknowledge the coöperation of Drs. Moore and Duggar in securing the *Bulletin of the Torrey Botanical Club*, and of Dr. Ivey Lewis in arranging and preparing for the binder a most confusing set of plates.

We are really in need of a number of journals that we do not have, and we should complete as soon as possible certain sets that have long been defective. The library needs an increased appropriation for handbooks, monographs, and general works like the *Encyclopedia Britannica*, the *Century Dictionary*, etc.

Above all, we must point out the great value of reprints and books sent here by individuals, and the importance of personal efforts in behalf of the library on the part of the biologists who use it. Such interest has already done much to build it up.

VI. THE DIRECTOR'S REPORT

TO THE TRUSTEES OF THE MARINE BIOLOGICAL LABORATORY:

Gentlemen: The season of 1915, the twenty-eighth session of the Marine Biological Laboratory, was marked by a farther

advance in many of the statistics of the Laboratory as will appear from the appended lists (1) of the Staff, (2) of the Investigators and Students, (3) the Tabular View of Attendance, (4) the Subscribing Institutions, (5) of the Evening Lectures, (6) of the Members of the Corporation. The Treasurer's report and the Librarian's report also show a healthy condition of growth. We have much cause for congratulation, and reason for deep thankfulness to Mr. Crane without whose whole-hearted financial support and intelligent sympathy with our objects, our best efforts must have been comparatively ineffective.

The number of investigators in attendance was 137 as compared with 129 in 1914, 122 in 1913 and 93 in 1912; the number of students was 105 as compared with 89 in 1914, 69 in 1913 and 67 in 1912. The total attendance was 242 as compared with 218 in 1914, 191 in 1913 and 160 in 1912. These figures bear testimony to the growing appreciation of the facilities furnished by the Laboratory both in research and in instruction. The number of institutions represented by these workers was 79, which is almost the same as in the two preceding years; the increase was therefore due to larger attendance from certain institutions. Indeed no considerable increase in the number of institutions represented is to be expected, because practically all of the larger institutions of higher education in the East and Middle West are represented each year, and the variations from year to year are accounted for by fluctuations of a more or less fortuitous character among the smaller institutions represented.

The receipts from subscribing institutions and fees were \$8,325 as compared with \$7,300 in 1914, \$6,160 in 1913 and \$5,175 in 1912. The Supply Department has also shown an encouraging increase, having filled 282 more orders than in 1914 with total paid receipts of \$16,932.00 as compared with \$14,003.35 in 1914.

Three important additions to the property and equipment of the Laboratory were made during the year: (1) The so-called Bake House property adjoining the Laboratory property on the east was purchased; this piece has about 103 feet frontage on the Eel pond and on the main street by 100 feet in depth, and its title carries with it the private roadway previously controlled jointly by the Laboratory and the owners of this property. The

old house on the property has been fitted up as a workshop for the carpenters' and plumbers' department, which was very badly needed. The frontage on the eel pond is especially valuable for future development. (2) The Laboratory also purchased the grounds and house known as the Ritter property, $78\frac{1}{2}$ by 100 feet, adjacent to the Whitman house, and opposite the lecture hall. The house furnished much needed enlargement of our dormitory facilities. (3) The old "Homestead" hitherto used as the matron's and helpers' house, adjoining the mess, was torn down and replaced by a much larger, modern and attractive dwelling house with accommodations for 43 persons. As all of this space was not needed for the mess, part of it was used for a woman's dormitory. We owe these three splendid additions to the facilities of the Laboratory, as I need hardly say, to the continued generosity, and thoughtfulness in the matter of all Laboratory needs, of the President of the Board of Trustees, Mr. Crane. Other improvements during the year were as follows: The steamer *Cayadetta* was thoroughly overhauled and her deck raised 18 inches at a cost of over \$2,000, so that she is a much stancher and more seaworthy boat than ever before. The filling in of the Laboratory harbor frontage, including the Yacht Club, has been completed; this will be graded and planted in the spring and the building moved to the east end of the frontage away from the center of the new laboratory building. Very considerable additions were made to the kitchen and laundry of the mess, power machinery electrically operated being installed for all the major operations, such as dish-washing, washing and drying of laundry, freezing ice-cream, etc. The work has thus been greatly lightened and facilitated. The Laboratory also transferred a 40-foot strip at the extreme north and west end of our Eel pond frontage to the town of Falmouth for the purposes of a boat landing, which has now been built at a cost of about \$1,500, equally divided between the town and Laboratory. This was in pursuance of an agreement entered into with the town at the time of the construction of the drawbridge over the Eel pond entrance. It is therefore now possible to use the Eel pond as a harbor, and to secure delivery of supplies by this back entrance to the Laboratory property.

With all of the enlargements and additions of the past few years the Laboratory is still badly crowded during the height of the season. This applies to a certain extent to the actual accommodations for workers in the laboratory buildings, but more particularly to the housing accommodations in the village. We are planning to meet the former condition by restricting numbers in the larger classes; applications for admission will be received up to May, and appointments then made in accordance with the number of working places; if places are still available after such assignments later applicants can be admitted. It is probable that by means of various adjustments we can continue to care for all qualified investigators.

The housing accommodations in the village, however, raise a more serious question. They are entirely inadequate, and there is a consequent tendency for the prices of rooms to advance, which results in discouraging attendance. Investigators who wish to carry on regular work at the Laboratory are unable to rent houses at reasonable rates for the accommodation of their families. Conditions have become increasingly discouraging in these respects for the past several years. Moreover, land is almost unavailable for those families who wish to solve the living problem by building. It is undoubted that these conditions will exercise an inhibiting influence on the work of the Laboratory in the future, and one of the most important problems before us is to devise some means of counteracting them.

As an organization we have laid the principle of coöperation at our foundation, and we have attempted to build it into every one of our activities. Our Board of Trustees is representative of the institutions of learning of the country; our corporation represents the workers in biology on the broadest lines we can secure; our staff of instructors is widely drawn from different institutions; our students and investigators come from all parts of the accessible territory, and some from abroad; we ask only that they have a fit preparation and exhibit the spirit of scholarship. We are not tied down to any one institution or small section of the country. In past years we have considered these principles worth struggling for, and we have more than once sacrificed security to freedom of action. Our recent years have been free

and comfortable. We must not allow ourselves to forget that the principles for which we stand are never entirely won; and I appeal therefore to every member of the Board of Trustees and to all members of the corporation not to allow a sense of security to dull the edge of devotion, to keep the interests of the Laboratory at heart and to work for their support in all possible ways.

I. THE STAFF

1915

FRANK R. LILLIE, DIRECTOR,
Professor of Embryology, and Chairman of the Department of
Zoölogy, The University of Chicago.

GILMAN A. DREW, ASSISTANT DIRECTOR,
Marine Biological Laboratory.

ZOÖLOGY

I. INVESTIGATION

- GARY N. CALKINS.....Professor of Protozoölogy, Columbia University.
E. G. CONKLIN.....Professor of Zoölogy, Princeton University.
GILMAN A. DREW.....Assistant Director, Marine Biological Laboratory.
GEORGE LEFEVRE.....Professor of Zoölogy, The University of Missouri.
FRANK R. LILLIE.....Professor of Embryology, The University of Chicago.
C. E. MCCLUNG.....Professor of Zoölogy, University of Pennsylvania.
T. H. MORGAN.....Professor of Experimental Zoölogy, Columbia University.
E. B. WILSON.....Professor of Zoölogy, Columbia University.

II. INSTRUCTION

- CASWELL GRAVE.....Associate Professor of Zoölogy, Johns Hopkins University.
W. C. ALLEE.....Assistant Professor of Zoölogy, University of Oklahoma.

- GEORGE A. BAITSELL.....Instructor in Biology, Yale University.
 RAYMOND BINFORD.....Professor of Biology, Earlham College.
 E. J. LUND.....Instructor in Protozoölogy, University of
 Pennsylvania.
 T. S. PAINTER.....Instructor in Biology, Yale University.

EMBRYOLOGY

I. INVESTIGATION (see Zoölogy)

II. INSTRUCTION

- WILLIAM E. KELLCOTT...Professor of Biology, Goucher College.
 ROBERT A. BUDINGTON...Professor of Zoölogy, Oberlin College.
 (Absent in 1915.)
 J. F. ABBOTT.....Professor of Zoölogy, Washington Uni-
 versity.
 CHARLES PACKARD.....Instructor in Zoölogy, Columbia Univer-
 sity.
 CHARLES C. ROGERS.....Professor of Zoölogy, Oberlin College.

PHYSIOLOGY

I. INVESTIGATION

- ALBERT P. MATHEWS.....Professor of Physiological Chemistry, The
 University of Chicago.
 RALPH S. LILLIE.....Professor of Biology, Clark University.
 HAROLD C. BRADLEY...Assistant Professor of Physiological
 Chemistry, University of Wisconsin.
 SHIRO TASHIRO.....Instructor in Physiological Chemistry, The
 University of Chicago.

II. INSTRUCTION

- RALPH S. LILLIE.....Professor of Biology, Clark University.
 WALTER E. GARREY.....Associate Professor of Physiology, Wash-
 ington University Medical School.
 FRANK P. KNOWLTON.....Professor of Physiology, Syracuse Univer-
 sity.
 EDWARD B. MEIGS.....Associate in Physiology, Wistar Institute
 of Anatomy and Biology.

PHILOSOPHICAL ASPECTS OF BIOLOGY AND ALLIED SCIENCES

LECTURES

- EDWARD G. SPAULDING....Professor of Philosophy, Princeton Uni-
 versity.

BOTANY

- GEORGE T. MOORE.....Director, Missouri Botanical Garden and
Professor of Botany, Washington Uni-
versity.
- B. M. DUGGAR.....Physiologist, Missouri Botanical Garden
and Professor of Plant Physiology,
Washington University. (Absent in
1915.)
- IVEY F. LEWIS.....Professor of Botany, University of Mis-
souri.
- R. H. COLLEY.....Instructor in Botany, Dartmouth College.
- A. R. DAVIS.....Lackland Research Fellow, Missouri Bo-
tanical Garden.
- W. H. WESTON.....Graduate Student, Harvard University.

LIBRARY

- H. McE. KNOWER.....Professor of Anatomy, University of Cin-
cinnati, Librarian.
- MARY E. SCOTT.....Assistant Librarian.

Chemical Supplies

- OLIVER S. STRONG.....Instructor in Anatomy, College of Physi-
cians and Surgeons, New York City,
Chemist.

Supply Department

- G. M. GRAY.....Curator.
- JOHN J. VEEDER.....Captain.
- E. M. LEWIS.....Engineer.
- A. W. LEATHERS.....Collector.
- A. M. HILTON.....Collector.
- F. G. GUSTAFSON.....Collector in Botany.
- EDNA E. WELLS.....Clerk.

-
- F. M. MACNAUGHT.....Business Assistant.
- HERBERT A. HILTON.....Superintendent of Buildings and Grounds.

2. INVESTIGATORS AND STUDENTS

1915

A. ZOÖLOGY

Independent Investigators

- ABBOTT, JAMES F., Professor of Zoölogy, Washington University.
ADDISON, WILLIAM H. F., Assistant Professor of Normal Histology and Embryology, University of Pennsylvania.
ALLEE, WARDER C., Professor of Biology, Lake Forest College.
ALLEN, EZRA, Professor of Biology, Philadelphia School of Pedagogy.
BAITSELL, GEORGE A., Instructor in Biology, Yale University.
BECKWITH, CORA J., Associate Professor of Zoölogy, Vassar College.
BINFORD, RAYMOND, Professor of Zoölogy, Earlham College, Richmond.
BORING, ALICE M., Associate Professor of Zoölogy, University of Maine.
BROWNE, ETHEL N., 510 Park Ave., Baltimore, Md.
CALKINS, GARY N., Professor of Protozoölogy, Columbia University.
CASTEEL, DANA B., Associate Professor of Zoölogy, University of Texas.
CHIDESTER, FLOYD E., Associate Professor of Zoölogy, Rutgers College.
CHILD, C. M., Associate Professor of Zoölogy, University of Chicago.
CLAPP, CORNELIA M., Professor of Zoölogy, Mt. Holyoke College.
CLARK, ELEANOR L., Columbia, Mo.
CLARK, ELIOT R., Professor of Anatomy, University of Missouri.
CONKLIN, EDWIN G., Professor of Biology, Princeton University.
COPELAND, MANTON, Professor of Biology, Bowdoin College.
COWDRY, E. V., Associate in Anatomy, Johns Hopkins Medical School.
COWDRY, N. H., Johns Hopkins Medical School, Baltimore, Md.
CRAMPTON, H. E., Professor of Zoölogy, Barnard College, Columbia Univ.
DANCHAKOFF, WERA, Woods Hole, Mass.
DEXTER, JOHN S., Professor of Biology, University of Saskatchewan.
DONALDSON, H. H., Wistar Institute of Anatomy and Biology.
DREW, GILMAN A., Assistant Director, Marine Biological Laboratory.
DUNN, ELIZABETH H., Woods Hole, Mass.
GEE, WILSON, Professor of Biology, Emory University, Oxford, Ga.
GOLDFARB, A. J., Professor of Biology, College of the City of New York.
GOLDSCHMIDT, RICHARD, Member of Kaiser Wilhelm Institut Für Biologie.
GRAVE, CASWELL, Associate Professor of Zoölogy, Johns Hopkins University.
GREGORY, EMILY R., Professor of Biology, University of Akron.
GREGORY, LOUISE H., Instructor in Zoölogy, Barnard College.
GROSS, ALFRED O., Bowdoin College, Brunswick, Maine.
HARMAN, MARY T., Assistant Professor of Zoölogy, Kansas State Agricultural College.
HARVEY, BASIL C. H., Associate Professor of Anatomy, University of Chicago.
HEILBRUNN, LEWIS V., Associate in Embryology, University of Chicago.
HEGNER, ROBERT W., Assistant Professor of Zoölogy, University of Michigan.
HOGUE, MARY J., Instructor in Zoölogy, Wellesley College.
JACOBS, MERKEL H., Assistant Professor of Zoölogy, University of Pennsylvania.

- KELLCOTT, WILLIAM E., Professor of Biology, Goucher College.
KNOWER, HENRY MCE., Professor of Anatomy, University of Cincinnati.
LANE, HENRY H., Professor of Zoölogy, State University of Oklahoma.
LEFEVRE, GEORGE, Professor of Zoölogy, University of Missouri.
LEWIS, MARGARET R., Carnegie Institution.
LEWIS, WARREN H., Professor of Physiological Anatomy, Johns Hopkins Medical School.
LILLIE, FRANK R., Professor of Embryology, University of Chicago.
LUND, ELMER J., Assistant Professor of Zoölogy, University of Minnesota.
MALONE, EDWARD F., Associate Professor of Anatomy, University of Cincinnati.
MACKLIN, CHARLES C., Johns Hopkins Medical School, Baltimore, Md.
MCCLUNG, CLARENCE E., Director of Zoölogical Laboratory, University of Pennsylvania.
MORGAN, T. H., Professor of Experimental Zoölogy, Columbia University.
MORGAN, ANNA H., Associate Professor of Zoölogy, Mt. Holyoke College.
MORRIS, MARGARET, Fellow in Zoölogy, Yale University.
PACKARD, CHARLES, Instructor in Zoölogy, Columbia University.
PAINTER, THEOPHILUS S., Instructor in Biology, Yale University.
PAPPENHEIMER, ALWIN M., Assistant Professor of Pathology, Columbia Univ.
PATTERSON, JOHN T., Professor of Zoölogy, University of Texas.
RICHARDS, A., Instructor in Zoölogy, University of Texas.
ROBERTSON, W. REES B., Assistant Professor of Zoölogy, University of Kansas.
SPAETH, REYNOLD A., Instructor in Biology, Yale University.
SPAULDING, E. G., Professor of Philosophy, Princeton University.
STOCKARD, CHARLES R., Professor of Anatomy, Cornell Medical College.
STREETER, GEORGE L., Research Associate, Carnegie Institution of Washington.
STRONG, OLIVER S., Instructor in Anatomy, Columbia University.
STURTEVANT, ALFRED H., Columbia University, New York City.
TENNENT, DAVID H., Professor of Biology, Bryn Mawr College.
WELCH, PAUL S., Assistant Professor of Entomology, Kansas State Agricultural College.
WOODWARD, ALVALYN E., Fellow in Zoölogy, University of Michigan.
ZELENY, CHARLES, Associate Professor of Zoölogy, University of Illinois.

Beginning Investigators

- ADKINS, W. S., Graduate Student, Columbia University.
ALTENBURG, EDGAR, Assistant in Botany, Columbia University.
BINKLEY, LELIA T., University of Texas.
BRIDGES, CALVIN B., Columbia University.
COHN, EDWIN J., University of Chicago.
COLLETT, MARY E., Instructor in Biology, Carnegie Institution of Technology.
FISH, J. BURTON, Teacher of Biology, Boys' High School, Brooklyn.
FREIBERG, HENRY B., University of Cincinnati.
GLOBUS, JOSEPH H., Assistant in Anatomy, Cornell Medical College.
GOLDMAN, AGNES, Cornell University.
GOODRICH, H. B., Union College, Schenectady.
GOULD, HARLEY N., Fellow in Biology, Princeton University.
HANCE, ROBERT T., Fellow in Zoölogy, University of Pennsylvania.
HASTINGS, GEORGE T., Teacher of Biology, DeWitt Clinton High School, Yonkers, N. Y.

HAYDEN, MARGARET A., Instructor in Biology, Carnegie Institute of Technology.
HOLT, CAROLINE M., Graduate Student, University of Pennsylvania.
HICKERNELL, LOUIS M., Instructor in Zoölogy, Syracuse University.
HOY, WILLIAM E., JR., Research Student, Princeton University.
JOHNSON, SYDNEY E., Fellow in Zoölogy, Northwestern University.
LYNCH, CLARA J., Instructor, Smith College.
MARKS, BERNICE, 4 East 94th St., New York City.
MEDES, GRACE, Graduate Student, Bryn Mawr College.
MINOURA, TADACHIKA, Zoölogy Department, University of Chicago.
MOORE, CARL R., University of Chicago.
OSTERUD, HJALMAR L., Instructor in Zoölogy, University of Washington
PHILLIPS, RUTH L., Associate Professor of Biology, Western College.
REAGAN, FRANKLIN T., Fellow in Biology, Princeton University.
ROOT, FRANCIS M., Johns Hopkins University.
SAFIR, SHELLEY R., Teacher in New York High School, New York City.
VANNEMAN, AIMÉE S., Technician, University of Texas.
WARE, CLARA C., Graduate Student, Columbia University.
WEINSTEIN, ALEXANDER, Columbia University.
WHEAT, FRANK M., Columbia University.
WHITING, PHINEAS W., University of Pennsylvania.
WHITE, EDITH G., Columbia University.
WILKINS, LAWSON, Johns Hopkins University.

B. PHYSIOLOGY

Independent Investigators

BOGACKI, KAMIL J., Physician, Western Reserve University.
CHAMBERS, ROBERT, JR., Assistant Professor of Histology and Comparative Anatomy, University of Cincinnati.
EDWARDS, DAYTON J., Instructor in Physiology, College of the City of New York.
GARREY, WALTER E., Associate Professor of Physiology, Washington University.
HYDE, IDA H., Professor of Physiology, University of Kansas.
JUST, ERNEST E., Professor of Physiology, Howard University.
KINGSBURY, FRANCIS B., Instructor in Physiological Chemistry, University of Minnesota.
KNOWLTON, FRANK P., Professor of Physiology, Syracuse University.
LILLIE, RALPH S., Professor of Biology, Clark University.
LOEB, JACQUES, Head of Department of Experimental Biology, Rockefeller Institute for Medical Research.
MATHEWS, ALBERT P., Professor of Physiological Chemistry, University of Chicago.
MEIGS, EDWARD B., 1722 H. Street, N. W., Washington, D. C.
MOORE, ARTHUR R., Associate Professor of Physiology, Bryn Mawr College.
ROGERS, CHARLES G., Professor of Comparative Physiology, Oberlin College.
SCOTT, ERNEST L., Associate in Physiology, Columbia University.
TASHIRO, SHIRO, Instructor in Physiological Chemistry, University of Chicago.
WALLER, JOHN C., Graduate Student, University of Chicago.
WARREN, HOWARD C., Professor of Psychology, Princeton University.
WASTENEYS, HARDOLPH, Associate in Experimental Biology, Rockefeller Institute for Medical Research.
WERBER, ERNEST L. Sessel Research Fellow, Yale University.

Beginning Investigators

- ATWOOD, W. G., Dartmouth College.
CHAMBERLAIN, MARY M., Bryn Mawr College.
LEVY, AUGUSTUS, University of Chicago.
CATTELL, McKEEN, Harvard Medical School.

C. BOTANY**Independent Investigators**

- BLAKESLEE, A. F., Professor of Botany and Genetics, Connecticut Agricultural College.
COLLEY, R. H., Instructor in Botany, Dartmouth College.
HIBBARD, R. PERCIVAL, Plant Physiologist, Michigan Agricultural College.
LEWIS, IVEY F., Professor of Botany, University of Missouri.
MOORE, GEORGE T., Director, Missouri Botanical Garden, St. Louis.
WESTON, WILLIAM H., JR., Instructor in Botany, Harvard University.

Beginning Investigators

- COBB, RUTH, Falls Church, Virginia.
SMITH, PEARL M., Assistant in Botany, University of Wisconsin.

STUDENTS

1915

I. ZOÖLOGY

- ADAMS, A. ELIZABETH, Instructor in Zoölogy, Mount Holyoke College.
ANDRUS, EDWIN C., Student, Oberlin College, Oberlin, Ohio.
ANDRUS, WILLIAM D. W., Student, Oberlin College, Oberlin, Ohio.
BAIN, THERESE S., Vassar College, Poughkeepsie, N. Y.
BALDWIN, IMOGEN, Student, Mt. Holyoke College, So. Hadley, Mass.
BELL, CHARLES E., Student, Ursinus College.
BLANCHARD, NELLIE P., Head of Biological Dept., Hood College.
CATTELL, OWEN, Garrison-on-Hudson.
CATTELL, PSYCHE, Student, Sargent, Cambridge, Mass.
CHARLTON, HARRY H., Assistant in Zoölogy, Yale University.
COCKS, EDMUND, Graduate Student, Columbia University, New York City.
COBB, MARGARET C., Barnard College, New York City, N. Y.
COWDERY, LAWRENCE T., Student, Oberlin College, Oberlin, Ohio.
CROSS, HOWARD B., Instructor, Oklahoma University, Norman, Okla.
DIBELL, MABEL E., Instructor of Biology, Western College.
EHRENFELD, FREDERICK, Assistant Professor of Geology, University of Pennsylvania.
GILBERT, MARION, Student, Oberlin College, Oberlin, Ohio.
GREISHEIMER, ESTHER M., Clark University, Worcester, Mass.
HARVEY, HELEN F., Oberlin College, Oberlin, Ohio.
HARRIS, COLEMAN J., Lewisburg, Pa.

HAYDEN, RUTH, Goucher College, Baltimore, Md.
 HEA, EMILY M., Teacher in High School, Morristown, N. J.
 HEEMAN, HARRIET M., Student, Oberlin College, Oberlin, Ohio.
 HOWE, MARION G., Mt. Holyoke College, So. Hadley, Mass.
 HUGHES, DOROTHEA M., Simmons College, Boston, Mass.
 HULST, MYRA M. Vassar College, Poughkeepsie, N. Y.
 IRVINE, HELEN, Student, Mt. Holyoke College, So. Hadley, Mass.
 JOSEPHS, H. W., Assistant in Chemistry, Harvard University, Cambridge.
 KOSTIR, WENCEL J., Instructor, Ohio State University, Columbus, Ohio.
 LUDWIG, ALBERT P., Student, Oberlin College, Oberlin, Ohio.
 MARINUS, CARLETON J., Syracuse University, Syracuse, N. Y.
 MAHR, ERNST F., JR., Syracuse University, Syracuse, N. Y.
 MCGRATH, JULE G., Laboratory Assistant, Hunter College, New York City.
 MOSES, GERTRUDE, 2002 Bolton St., Baltimore, Md.
 OUDESLUYS, HORTENSE, Teacher, Western High School, Baltimore, Md.
 PENNYPACKER, FRANCES W., Sweet Briar College.
 RIPLE, CLARENCE V., Student, University of Pennsylvania, Philadelphia.
 ROGERS, MILDRED, Student, Goucher College, Baltimore, Md.
 RUNYON, PAUL M., Student, Princeton University, Princeton, N. J.
 SANFORD, ELDON W., Graduate Student, Yale University, New Haven, Conn.
 SHELDON, PAUL B., Student, Oberlin College, Oberlin, Ohio.
 SMITH, SUE F., Carnegie Institute of Technology.
 SMITH, CHRISTIANNA, Assistant in Zoölogy Laboratory, Mt. Holyoke College, So. Hadley, Mass.
 SMITH, INEZ C., Student, Mt. Holyoke College, So. Hadley, Mass.
 SPENCE, MARGARET, Instructor La Crosse State Normal School, La Crosse.
 WILDER, KATHERINE, Science Assistant, The Newton High School.
 WRIGHT, HELEN G., Student, Mt. Holyoke College, So. Hadley, Mass.

2. EMBRYOLOGY

ASHMAN, RICHARD, Rutgers College, New Brunswick, N. J.
 ALLARD, ANN D., Teacher, So. Boston, Mass.
 BLANCHARD, FRANK H., Instructor, Tufts College, Mass.
 BLAU, JULIA E., Princeton, N. J.
 CAHN, ALVIN R., Assistant in Zoölogy, University of Wisconsin, Madison, Wis.
 CARROLL, MITCHEL, 617 So. 16th St., Philadelphia, Pa.
 CLOSSON, JAMES H., Student, Princeton University, Princeton, N. J.
 COBB, DOROTHY, Student, Radcliffe College, Cambridge, Mass.
 CUTTER, ELIZABETH, Assistant in Zoölogy, Vassar College.
 FARNUM, ALICE R., Student, Smith College, Northampton, Mass.
 FISH, GORDON T., Assistant, Yale University, New Haven, Conn.
 HAMLIN, HOWARD E., Student, Harvard University, Cambridge, Mass.
 HENRY, EDNA M., Student, Barnard College, New York City, N. Y.
 HERRICK, JOSEPH C., Professor of Biology, St. Joseph's Seminary, Yonkers, N. Y.
 HUFFORD, CLARENCE E., Student, Oberlin College, Oberlin, Ohio.
 HURLIN, RALPH G., Instructor, Clark College.
 JAMIESON, JANET P., Student, University of Pennsylvania.
 KAKIUCHI, SAMURO, Yale University, New Haven, Conn.
 LEWIS, ELSIE M., Student, Oberlin College, Oberlin, Ohio.

- MACY, CORA F., Student, Syracuse University, Syracuse, N. Y.
MALLARD, AGNES K., Teacher, 1658 Columbia Road, So. Boston, Mass.
MYERS, MAE L., Associate Professor of Anatomy, Woman's Medical College of Pennsylvania.
MILLIKAN, FRANCES, Student, Smith College, Northampton, Mass.
MONTGOMERY, PRISCILLA B., 105 So. 41 St., Philadelphia, Pa.
PARMENTER, CHARLES L., Assistant Professor, University of Wisconsin.
PATTEN, MARY W., Goucher College, Baltimore, Md.
RICHARDS, LYMAN G., 259 Prospect St., Fall River, Mass.
RICHARDS, GEORGE L., 124 Franklin St., Fall River, Mass.
SHERWOOD, HELEN L., Student, Vassar College, Poughkeepsie, N. Y.
STOCKING, RUTH J., Professor of Biology, Agnes Scott College, Decatur.
STOCKING, BESSE E., Student, Goucher College, Baltimore, Md.
STRAUS, AUBREY H., Associate Professor of Bacteriology, Medical College of Virginia, Richmond, Va.
THOMAS, ANNA M., Student, Carnegie Institute of Technology.
WEBSTER, LESLIE T., Amherst College, Amherst, Mass.
WILLIAMS, G. HUNTINGTON, Graduate Student, Johns Hopkins Medical School.
WILLIAMS, JAMES W., Lincoln St., New Haven, Conn.
WINSLOW, MINA L., Graduate Student, University of Michigan.

3. PHYSIOLOGY

- ADLER, FRANCIS H., University of Pennsylvania, Philadelphia, Pa.
BENSING, LERUE P., Research Assistant, Research Commission of Natural Dental Association, Cleveland, Ohio.
BODINE, JOSEPH H., University of Pennsylvania, Philadelphia, Pa.
FENN, WALLACE O., Harvard University, Cambridge, Mass.
EGGSTEIN, A. A., Instructor in Pathology, Vanderbilt College.
HOLT, EMMETT, 14 West 55th St., New York City, N. Y.
HUGHES, WALTER S., Massachusetts Institute of Technology.
LOEB, ROBERT F., Student, University of Chicago, Chicago, Ill.
LUNDGREN, C. ALBERT, Assistant in Biology, Clark University.
METCALF, JOHN T., Instructor in Psychology, Princeton University.
MINNICH, DWIGHT E., Harvard University, Cambridge, Mass.
PRICE, WESTON A., Chairman, The Research Commission of the National Dental Association, Cleveland, Ohio.
REEVES, PRENTICE, Assistant in Experimental Psychology, Princeton Univ.
SCHNEIDER, PETER A., Instructor in Zoölogy, University of Vermont.
THOMPSON, MARTHA, Teacher of Biology, Bay Ridge High School, New York City, N. Y.

4. BOTANY

- MCCONNELL, LOUISE J., 341 Rector St., Perth Amboy, N. J.
MONG, GRACE E., Student, Oberlin College, Oberlin, Ohio.
OAK, DOROTHY, Student, Barnard College, New York City, N. Y.
SEVERY, J. WARREN, Student, Oberlin College, Oberlin, Ohio.
YASUI, KONO, Student, Radcliffe College, Cambridge, Mass.
YOUNG, ANNA R., Student, Smith College, Northampton, Mass.

3. TABULAR VIEW OF ATTENDANCE

	1911	1912	1913	1914	1915
INVESTIGATORS—Total.....	82	93	122	129	137
Independent:					
Zoölogy.....	42	44	58	62	69
Physiology.....	18	14	17	22	20
Botany.....	8	10	11	10	6
Under Instruction:					
Zoölogy.....	12	21	21	31	36
Physiology.....	2	2	7	1	4
Botany.....		2	7	3	2
STUDENTS—Total.....	65	67	69	89	105
Zoölogy.....	26	24	33	43	47
Embryology.....	20	15	22	21	37
Physiology.....	6	11	8	10	15
Botany.....	13	17	7	15	6
TOTAL ATTENDANCE.....	147	160	191	218	242
INSTITUTIONS REPRESENTED—					
Total.....		57	80	77	79
By investigators.....	37	43	50	51	59
By students.....	31	36	41	47	42
SCHOOLS AND ACADEMIES REPRESENTED.					
By investigators.....	3	2	3	1	3
By students.....	9	1	6	5	9

4. SUBSCRIBING INSTITUTIONS—1915

AMHERST COLLEGE
 BARNARD COLLEGE
 BOWDOIN COLLEGE
 BRYN MAWR COLLEGE
 CARNEGIE INSTITUTE OF TECHNOLOGY
 CARNEGIE INSTITUTION, WASHINGTON
 CLARK UNIVERSITY
 COLUMBIA UNIVERSITY
 DARTMOUTH COLLEGE
 ELSE SERINGHAUS SCHOLARSHIP, HUNTER COLLEGE, NEW YORK
 CITY
 GOUCHER COLLEGE

HARVARD UNIVERSITY
JOHNS HOPKINS UNIVERSITY
KANSAS STATE AGRICULTURAL COLLEGE
LUCRETIA CROCKER SCHOLARSHIPS
MOUNT HOLYOKE COLLEGE
NORTHWESTERN UNIVERSITY
OBERLIN COLLEGE
PRINCETON UNIVERSITY, DEPT. OF BIOLOGY
PRINCETON UNIVERSITY, DEPT. OF PSYCHOLOGY
RADCLIFFE COLLEGE
ROCKEFELLER INSTITUTE FOR MEDICAL RESEARCH
RUTGERS COLLEGE
SMITH COLLEGE
SYRACUSE UNIVERSITY
UNIVERSITY OF CHICAGO
UNIVERSITY OF ILLINOIS
UNIVERSITY OF KANSAS
UNIVERSITY OF MICHIGAN
UNIVERSITY OF PENNSYLVANIA
UNIVERSITY OF TEXAS
UNIVERSITY OF WISCONSIN
VASSAR COLLEGE
WELLESLEY COLLEGE
WESTERN COLLEGE
WISTAR INSTITUTE
YALE UNIVERSITY

5. EVENING LECTURES, 1915

Friday, July 2,

PROF. C. R. STOCKARD... "Experimental Production of Racial Degeneracy by Alcohol Poisoning."

Tuesday, July 6,

PROF. C. H. PARKER... "The Seals of the Pribiloff Islands."

Friday, July 9,

PROF. G. L. STREETER... "Some Experimental Studies on the Development of the Membranous Labyrinth in the Tadpole."

Tuesday, July 13,

PROF. E. G. CONKLIN... "Effects of Centrifugal Force on the Structure and Development of the Egg."

Friday, July 16,

PROF. R. S. LILLIE "The Nature of Intelligent and Purposive Action from a Physiological Point of View."

Monday, July 19,

PROF. SIMON FLEXNER . . "The Control of Infection as Affected by Variation Among Parasitic Microorganisms."

Saturday, July 24,

PROF. G. N. CALKINS . . "Protozoa and the Cancer Problem."

Friday, July 30,

PROF. GEORGE SHULL . . "Inheritance of Sex in *Lychnis*."

Tuesday, Aug. 3,

PROF. C. B. DAVENPORT "Heredity of Criminality."

Friday, Aug. 6.

DR. MARTIN EDWARDS . . "The Story of Bubonic Plague."

Tuesday, Aug. 10,

DR. ALFRED G. MAYER. "The Rôle of Adsorption in Nerve Conduction."

6. MEMBERS OF THE CORPORATION

I. LIFE MEMBERS

ALLIS, MR. E. P., JR., Palais Carnoles, Menton, France.

ANDREWS, MRS. GWENDOLEN FOULKE, Baltimore, Md.

BILLINGS, MR. R. C., 66 Franklin St., Boston, Mass.

CAREY, MR. ARTHUR ASTOR, Fayerweather St., Boston, Mass.

CLARKE, PROF. S. F., Williams College, Williamstown, Mass.

CONKLIN, PROF. EDWIN G., Princeton University, Princeton, N. J.

CRANE, MR. C. R., Woods Hole, Mass.

DAVIS, MAJOR HENRY M., Syracuse, N. Y.

EVANS, MRS. GLENDOWER, 12 Otis Place, Boston, Mass.

FARLOW, PROF. W. G., Harvard University, Cambridge, Mass.

FAY, MISS S. B., 88 Mt. Vernon St., Boston, Mass.

FOLSOM, MISS AMY, 88 Marlboro St., Boston, Mass.

FOOT, MISS KATHERINE, 80 Madison Ave., New York City, N. Y.

GARDINER, MRS. E. G., Woods Hole, Mass.

GARDINER, MISS EUGENIA, 15 W. Cedar St., Boston, Mass.

HANNAMAN, MR. CHARLES E., 103 1st St., Troy, N. Y.

HARRISON, EX-PROVOST C. C., University of Pennsylvania, Philadelphia, Pa.

JACKSON, MISS M. C., 88 Marlboro St., Boston, Mass.

JACKSON, MR. CHAS. C., 24 Congress St., Boston, Mass.

KENNEDY, MR. GEO. G., 284 Warren St., Roxbury, Mass.

KIDDER, MR. C. G., 27 William St., New York City, N. Y.

KIDDER, MR. NATHANIEL T., Milton, Mass.

KING, MR. CHAS. A.

LEE, MRS. FREDERIC S., 279 Madison Ave., New York City, N. Y.

LOWELL, MR. A. LAWRENCE, 171 Marlboro St., Boston, Mass.

MARRS, MRS. LAURA NORCROSS, 9 Commonwealth Ave., Boston, Mass.

MASON, MR. E. F., 1 Walnut St., Boston, Mass.

MASON, MISS IDA M., 1 Walnut St. Boston, Mass.

MEANS, MR. JAMES HOWARD, 196 Beacon St., Boston, Mass.

MERRIMAN, MRS. DANIEL, Worcester, Mass.

MINNS, MISS SUSAN, 14 Louisburg Square, Boston, Mass.

MINNS, MR. THOMAS, 14 Louisburg Square, Boston, Mass.

MIXTER, MISS M. C., 241 Marlboro St., Boston, Mass.

MORGAN, MR. J. PIERPONT, JR., Wall and Broad Sts., New York City, N. Y.

MORGAN, PROF. T. H., Columbia University, New York City, N. Y.

MORGAN, MRS. T. H., New York City, N. Y.

NOYES, MISS EVA J., 28 South Willow St., Montclair, N. J.

NUNN, MR. LUCIAN L. Telluride, Colo.

OSBORN, PROF. HENRY F., American Museum of Natural History, New York.

PHILLIPS, DR. JOHN C., Windy Knob, Newham, Mass.

PHILLIPS, MRS. JOHN C., Windy Knob, Newham, Mass.

PORTER, DR. H. C., University of Pennsylvania, Philadelphia, Pa.

PULSIFER, MR. W. H., Newton Center, Mass.

ROGERS, MISS A. P., 5 Joy St., Boston, Mass.

SEARS, DR. HENRY F., 420 Beacon St., Boston, Mass.

SHEDD, MR. E. A.,

SMITH, MRS. C. C., 286 Marlboro St., Boston, Mass.

STROBELL, MISS E. C., 80 Madison Ave., New York City, N. Y.

THORNDIKE, DR. EDWARD L., Teachers College, Columbia University, New York City, N. Y.

TRELEASE, PROF. WILLIAM, University of Illinois, Champaign, Ill.
WARE, MISS MARY L., 41 Brimmer St., Boston, Mass.
WARREN, MRS. S. D., 67 Mt. Vernon St., Boston, Mass.
WHITNEY, MR. HENRY M., Brookline, Mass.
WILLCOX, MISS MARY A., Wellesley College, Wellesley, Mass.
WILMARTH, MRS. H. D., Elliott St., Jamaica Plain, Mass.
WILLIAMS, MRS. ANNA P., 505 Beacon St., Boston, Mass.
WILSON, DR. E. B., Columbia University, New York City, N. Y.
WILSON, PROF. W. P., Philadelphia Museum, Philadelphia, Pa.

2. MEMBERS, JANUARY, 1916

ABBOTT, PROF. J. F., Washington University, St. Louis, Mo.
ABBOTT, MISS MARGARET B., The Bennett School, Milbrook, N. Y.
ADDISON, DR. W. H. F., University of Pennsylvania, Medical School, Philadelphia, Pa.
ADKINS, MR. W. S., Texas Christian University, Fort Worth, Texas.
ALLEE, DR. W. C., Lake Forest College, Lake Forest, Ill.
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